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Forest Service

FS 414

Roads in the National Forests

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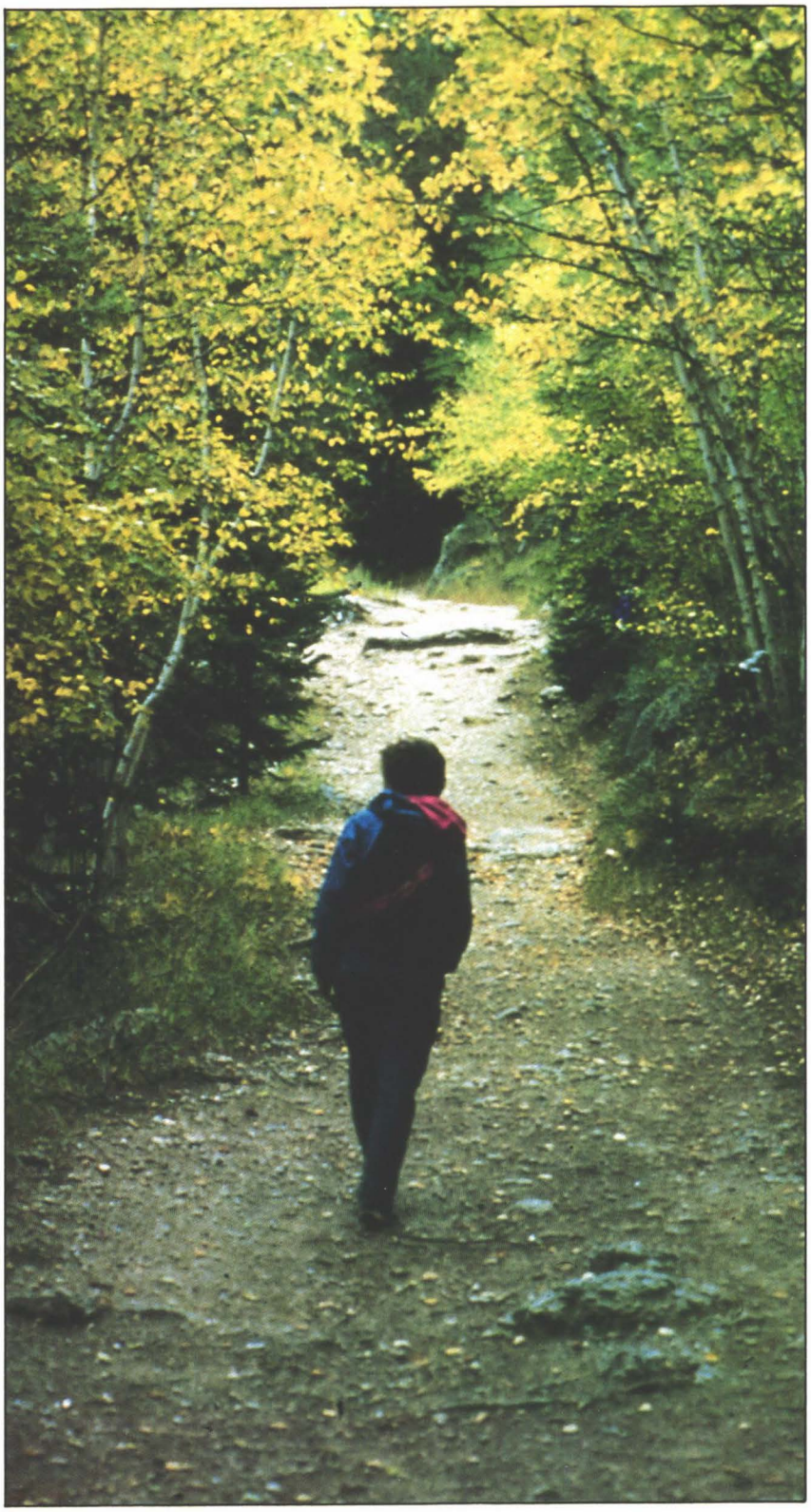
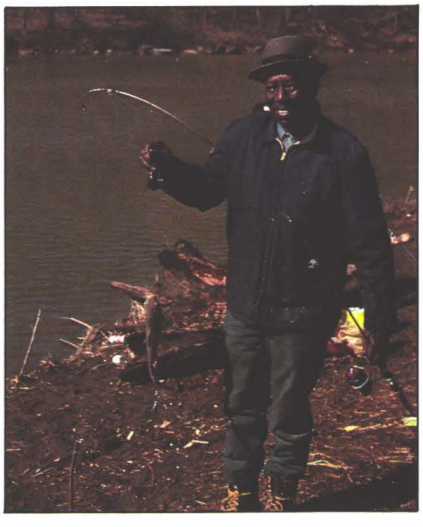
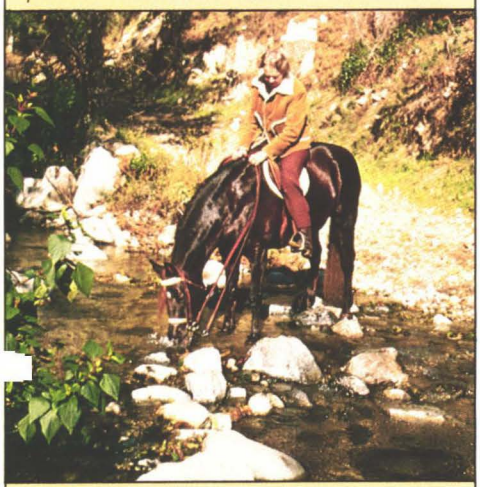


May 1988

Caring for the land and serving people through a managed transportation system.



A well-planned, well-built, well-managed transportation system can support many forest activities and, in many areas, can provide habitat variety for plants and animals as well.



Hiking and horseback riding

Fire protection

The National Forest System comprises nearly 191 million acres of forests and grasslands, an area about the same as much of the eastern seaboard (the combined total areas of the states from Maine to North Carolina plus West Virginia). A national forest or a national grassland is within a day's drive of every citizen of the United States. Caring for this much land, and serving the citizens who use it, requires an extensive road system.

Roads exist or are built in the national forests to provide for the movement of people and resources in and out of the forests. Roads provide access for recreationists, allowing hikers to reach trail heads to Wilderness Areas, for example. Roads provide access for management of timber resources, allowing Forest Service workers to carry out silvicultural treatments, stand improvement, reforestation, and brush and weed control, and for protection for all resources through control of fire, insects, and disease. Roads are also necessary for production of timber, livestock, and minerals.

With so many uses and users, conflicts and concerns develop that lead

Cutting firewood and gathering forest products

Energy development

to questions about road suitability: Why are roads needed? How many roads are needed? Where are roads needed? How much will they cost? How will the roads affect the environmental quality of the area? What are appropriate road standards? Why are roads open or closed to vehicular traffic? All these questions need to be answered before the first stake goes into the ground.

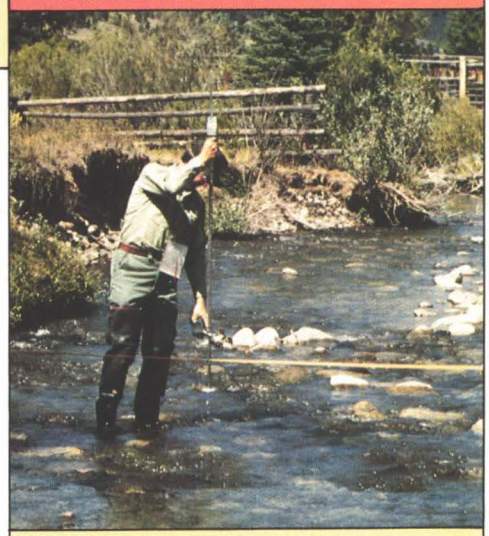
Many of the new roads in the National Forest System are built initially for harvesting timber. The Forest Service timber sale program provides approximately 25 percent of the timber used for lumber and plywood needed by the Nation's citizens and contributes hundreds of millions of dollars to the national treasury as well. Expenditures for construction and maintenance of roads built to provide access for protection and management of renewable resources are an investment in the future. The initial costs of the road system are recovered many times over as goods and services continue to flow from the national forests.

Once roads are built, however, they are generally used for more than just hauling timber. The public wants to use them, Forest Service managers need to use them, and all have something different in mind.

A forest road system is very different from our urban and suburban roads systems. A square mile of national forest contains an average of just a little more than 1 mile of roads, whereas a square mile of city may contain as many as 20 miles of streets. Also, most of the roads in national forests are unpaved and only one lane wide.

Timber harvesting

Every road in the system is planned to protect the environment while meeting the diverse and growing needs of the public. During this planning, and any subsequent development, Forest Service managers work with all the users. This publication tells the story of roads in the National Forest System—past, present, and future—and explains how the planning procedure works.



Watershed restoration and fish stocking

Historically

ROADS WERE CREATED IN RESPONSE TO THE NEEDS OF A GROWING AND CHANGING NATION

The past 100 years have seen remarkable economic, industrial, and social growth and change in the United States. By the turn of the century, logging operations and fires had denuded much of the East of forest, and it appeared that some parts of the West might be in similar jeopardy.

The land and remaining forests needed protection. In 1891 Congress authorized the President to create the first forest reserves out of public domain lands in the West, and in the following years many more were established. In 1905 the Forest Service was designated to protect and manage those reserves, which were renamed national forests. In 1911 Congress passed the Weeks Act, which authorized the purchase of private lands for conversion into national forests, as a means to set aside lands in the East.

The national forests in the Eastern United States were created from a patchwork of privately owned, cut-over lands. Many roads and trails already existed on these lands when they passed into Federal ownership. The national forests in the Western United States had fewer roads but were traversed by many trails, which suited the transportation needs of the times. As society became more mobile and technologically advanced, transportation needs changed and roads began replacing trails. During World War I, the pace of roadbuilding increased as raw materials from the national forests were needed for war industries.

When the economy nearly collapsed in the 1930's, the Forest Service provided jobs and housing for Civilian Conservation Corps (CCC) enrollees. In return, CCC crews improved old roads and built many miles of new ones. Between 1933 and 1942, their work improved and expanded the national forest road system throughout the country, thus setting the stage for increased public use.

During World War II, additional roads were built into the national forests to provide access to materials and resources that were critical for the war effort. The postwar economy stimulated many improvements in transportation, and many new roads were built to get forest products to the marketplace. These roads had to accommodate larger, heavier trucks and sometimes had to be built on better locations a short distance from old roads.

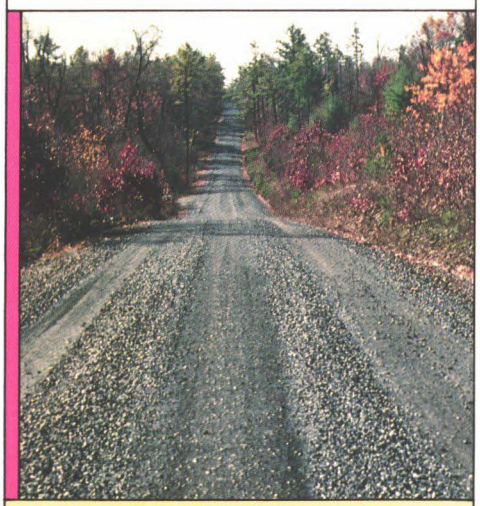
The changing leisure-time habits of Americans led to accelerated use of national forest roads for all kinds of recreational activities. From 1945 to 1965, the road system increased 100,000 miles in response to the needs of the various users. Many people came to believe that all roads were open for use and would remain open forever. This belief led to conflicts between proponents of the various types of land use. The increased miles, increased use, and increased types of use of forest roads caused continuing and escalating environmental and managerial problems.

Increasing demands for national forest resources prompted Congress to pass the Multiple-Use Sustained-Yield Act of 1960. This legislation emphasized integrated management of all renewable resources—timber, range, recreation, water, and wildlife. Locations of roads and standards for their construction within the national forests needed to be improved to meet increased demands for these uses.

Increasing public environmental concern and awareness opened up new areas of emphasis and direction, and legislation was passed to address them. In the 1970's, Congress set the framework for long-term land and resource management planning with passage of the Renewable Resources Planning Act (RPA) and the National Forest Management Act (NFMA). RPA directed that long-range plans be developed to ensure that the United States has an adequate future supply of renewable resources from the Nation's 1.5 billion acres of public and private forests and rangelands. The NFMA required the creation of management plans for each national forest that spell out such things as locations of new areas for recreation, tree harvesting, or wildlife management and include roads needed to support these management objectives.

Today

THE NATIONAL FOREST ROAD SYSTEM RESPONDS TO A VARIETY OF CHALLENGES AND CONCERNS



***Collector roads** are intermediate links. They connect major, heavily traveled, multiple-purpose arterial routes and single-resource local roads. A collector road usually services several local, dead-end roads.*

As we implement our forest management plans in the 1980's, we are resolving some longstanding policy issues, one of which is how the Forest Service will manage the national forests to implement the multiple-use concept. A system of roads is vital to this concept if all citizens are to share in the benefits of the Nation's forests. Much of the road system is in place, and the amount of new construction each year is now decreasing. These days about half of Forest Service road construction funds are spent restoring and improving existing roads and half on building new ones. As time goes on, a larger and larger proportion of these funds will be used for reconstruction and improvement of existing roads.

The Different types of roads. The transportation system in today's national forests is made up of many types of roads. Only a small percentage of these roads can be described as highways. High-standard roads, called "arterial roads," make up about 5 percent of the national forest road system. They are often two-lane and paved and can handle unrestricted traffic at moderate speeds. Arterial roads are expensive to build and maintain. These forest arterial roads are similar to the State and county roads that cross national forests.

Branching from the arterial roads into the forests are the "collector roads"—the medium-standard roads that constitute about 20 percent of the mileage in the system. They may carry mixed timber and recreation traffic, so they may have turnouts or be wide enough to allow vehicles meeting each other to pass. Collector roads are usually stable enough for most traffic during the normal season of use. They cost about half as much to build and maintain as arterial roads.

Small, single-lane roads, known as "local roads," are found at the end of the road system, and constitute about 75 pecent of the system. These minimum-standard roads pro-

***Arterial roads** provide service to large land areas, usually from 3,000 to 10,000 acres.*

vide access for specific purposes, such as conducting a timber sale, tending a grazing allotment, maintaining an electronic communications station, reaching a trail head, or maintaining a dam. They allow limited passing, and the road conditions require that vehicles move slowly. These roads are much used by the public for hiking, horseback riding, berry picking, birding, and hunting and are often seeded with grasses and plants for wildlife. Many are closed to vehicular traffic much of the time. The surfaces of such roads may not be stable under all traffic or weather conditions and may be rough and dusty. Construction and maintenance costs are very low.

The major transporation challenges. Many of the arterial and collector roads are already in place. With the exception of some areas of the northern Rocky Mountains and Alaska, very few new arterial and collector roads need to be built. There will be some need, however, for new collector roads if designated "roadless areas" are released from consideration by Congress as wilderness and become available for multiple-use management as other than wilderness. Therefore, most of the Forest Service planning for the future focuses on what is needed most in today's forests—local road construction and reconstruction. These shorter roads will be built for a specific short-term activity and then will be managed to meet other resource needs.

So it is local roads that present the major transportation challenges to Forest Service managers. Some people want all roads to provide year-round access for a continuous flow of products or recreational opportunities. This kind of access requires relatively high road standards. Others want road standards lowered to provide primitive or semiprimitive recreational opportunities and to protect wildlife habitat. Yet others would rather have no additional access roads constructed at all.

How does the Forest Service resolve these conflicting desires? The answer lies in making the public a participant in integrated solutions. Public concerns are of prime importance to the Forest Service, and by working with the public, the type of roads constructed can be brought more closely into line with public desires and needs. The mechanism for seeking this favorable condition is the land and resource management plan, commonly called the forest plan.

Local roads *connect terminal facilities, such as log landings and recreation sites, with forest collector or arterial roads, or with public highways. They often are less than 1.5 miles long and are built initially to serve a single purpose.*

Planning for the Future

THE FOREST LAND AND RESOURCE MANAGEMENT PLAN

***Wilderness** areas are included to insure that they are avoided by planned road locations. Other special management areas in which the Forest Service does not build roads are also shown.*

A land and resource management plan is prepared for each national forest in the Nation. These forest plans, which are being developed in cooperation with the public, provide for the protection and management of resources and their use by the public. They describe the various resource management activities that will take place, and where and what kind of access will be required to carry out management activities. They also include specific directions for planning, building, and managing roads to fulfill their intended use, and they guide what is to be done with the roads after their initial purposes have been satisfied.

An interdisciplinary team of Forest Service specialists uses resource information to plan the transportation system that will meet the objectives of forest plans. These specialists determine what road network is necessary, how it should be used, and whether benefits will equal costs. They develop the design criteria, determine the best location, and evaluate the effects on soils, timber, wildlife, water, and recreation, as well as develop methods for managing traffic. Before final decisions are made, however, public comment is solicited and evaluated to ensure that the plans are acceptable and that road locations, designs, and management conform to resource programs outlined in the forest plan.

The Forest Service Transportation system supports our philosophy of caring for the land and serving people.

***Soils** information shows critical or unstable soils, which cannot support vehicle traffic, and physical barriers such as cliffs and swamps.*

Water *information will include rivers, streams, and wetlands as well as concerns about erosion, drainage, and water quality.*

Archeological and cultural *information lists, describes, and assures the protection and proper care of archeological and historical sites.*

HOW DOES INTERDISCIPLINARY PLANNING WORK?

By working together now, we will assure that present and future generations are served well by the national forests.

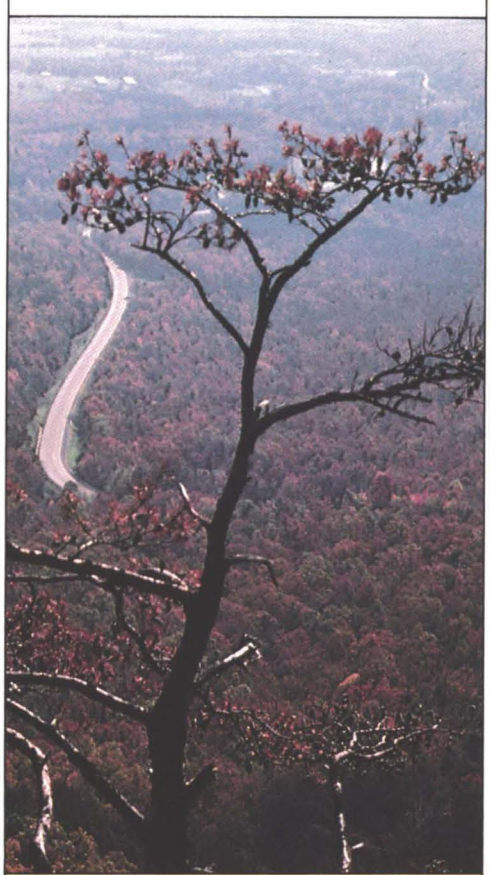
***Timber** information includes condition of the timber, its age and age distribution throughout the area, its suitability for harvest, and reforestation needs.*

Inventory. The inventory of an area's resources includes information on soils, water, archeological and cultural sites, wildlife, recreation, roads, visual quality, timber, and wilderness. Completed maps of this information can be used as a basis for decision making. An interdisciplinary team of Forest Service specialists—soil scientists, geologists, foresters, engineers, landscape architects, hydrologists, and wildlife biologists—analyzes the information in the inventory, the road alternatives, and the intended purpose and other uses of the roads to determine the standards to which the roads will be constructed and managed.

Analysis and development. After the resource data and public concerns about the proposed roads have been gathered, Forest Service specialists analyze all the information in order to locate and develop design criteria that meet the needs of the resource as well as the needs of the public. Or, they decide that a proposed road is not acceptable. This process assures that all roads are planned and will be built in a manner that protects the environment, is cost-effective, and addresses the wishes of the public.

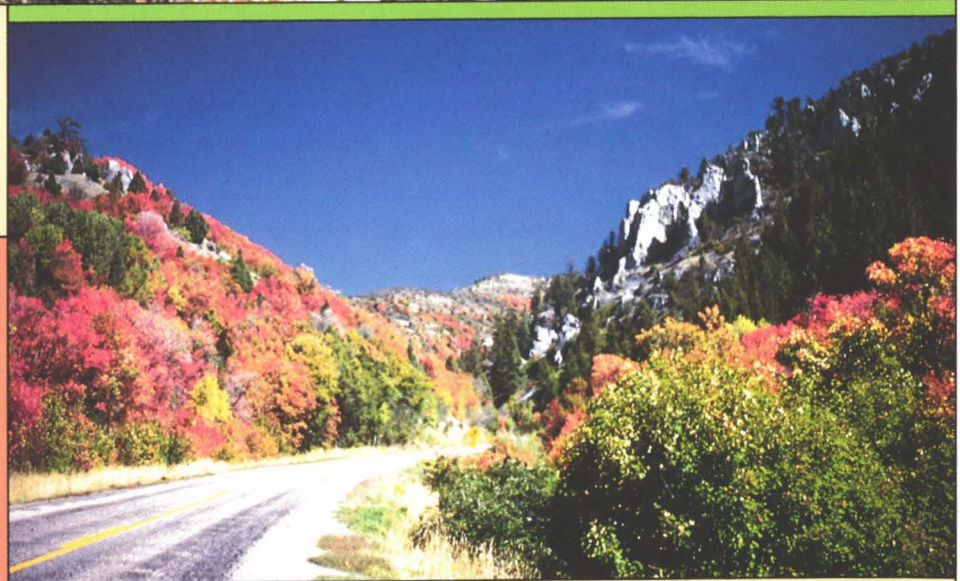
If the proposed road is considered acceptable, preliminary plans are then offered to interested groups of the public for response to specific concerns; this is usually done with a document called an environmental assessment. Then, final adjustments are made and a road plan evolves that will attain the goal of providing benefits for many.

Using the approach of serving all uses, the Forest Service constructs a system of various types of roads to meet specific needs. This results in considerable cost savings, better management of the natural resources, and better environmental quality.



***Roads** information shows existing roads, rights-of-way, and ownership of roads.*

Wildlife *information includes threatened or endangered species, existing improvements to wildlife habitat, opportunities for habitat improvements, species to be emphasized, and age and distribution of the vegetation desired for habitat.*

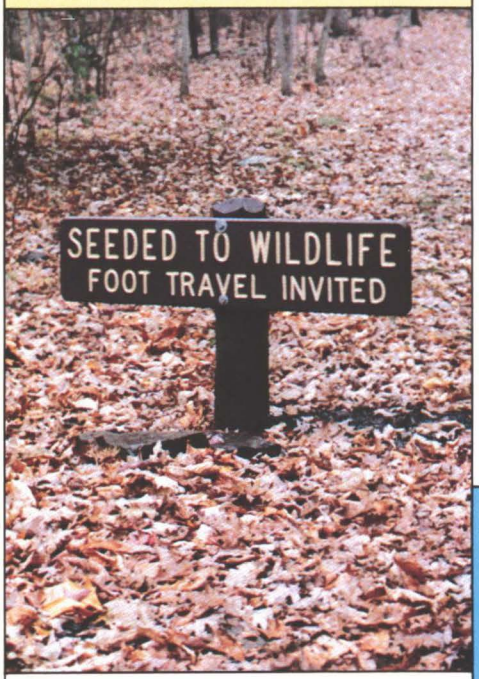


Visual quality *information includes what changes in the scenery are desirable to the public.*

Recreation *information includes what is currently available and the desired future recreational opportunities to be offered in the area.*

PUTTING FOREST LAND AND RESOURCE MANAGEMENT PLANS TO WORK

Roads can be used for hunting and other walking recreation, even though they are closed to vehicles.



The use of interdisciplinary teams in producing forest plans gives forest managers the flexibility to respond to the many and changing needs for services and products and also to respond to the issues that most concern users of national forest roads.

Road management principles. Forest plans provide specific directions for developing and managing the transportation system according to the following principles:

- All roads will be inventoried and decisions made about their intended uses.
- Roads not needed will be closed and the land managed for natural resource purposes. They may be seeded with grass or, in low-use areas, simply abandoned and left to return to a natural condition on their own.
- Needed roads may be relocated to more desirable locations.
- Construction standards for permanent roads will be the minimum needed to meet intended uses.
- Traffic management methods, such as road closures, restrictions on use, and information signs, will be ap-

plied to roads based on their intended use and the safety of users.

Limited access is a positive method of resource management. More attention is being given to closing roads as a means of protecting resources. Nearly half the new roads being built will be closed periodically to protect wildlife and reduce maintenance costs or be closed simply because the roads are no longer needed for recurrent resource activities.

Whether a road should be closed is determined by examining the objectives in the forest plans. If it is determined that constant vehicle use is unnecessary, the Forest Service closes the road and puts it in storage, so to speak, until it is needed for another planned resource activity. During the closure period, the road is usually available for such uses as hiking, horseback riding, and hunting. In some cases, roads are obliterated and seeded with grass when they are no longer needed. Local roads not needed until later may be closed with earthen berms.

In some instances, when weather (such as during spring thaw) or road conditions cannot provide for safe use, or in periods critical to wildlife (such as elk calving), roads can be closed temporarily. These closures may range from a few weeks each year to several years. Some roads are closed to avoid soil erosion and preserve water quality, then reopened some years later when necessary for timber harvest or other use.

Public attitudes toward this method of traffic management vary. Some people believe the public should have an unrestricted right of vehicular use of national forest roads built with public money. Others believe that, since primitive and semi-primitive recreation opportunities and wildlife habitat are not readily available on private lands, limited access is the most logical way to provide these opportunities on National Forest System lands.

The Forest Service Transportation system supports our philosophy of caring for the land and serving people.

The Forest Service recognizes that care is needed in road planning and construction. Roads must not be built everywhere, and there are many locations, including many types of roadless areas, in which the agency does not build roads. Roads are built on the basis of need, as determined by the management objectives in forest plans.

Setting standards means we can provide a variety of roads to meet intended uses. Roads must be built to the standards that will meet the needs of the resources and the agency, and the desires and needs of the public.

National forest managers and planners are working constantly to improve the management of all natural resources and will continue to remain sensitive to the needs and concerns of those using the national forests. Their role as public land managers is to balance all these considerations and choose what is best for everyone. Only through continuing communication with you—the people—can this role be fulfilled.

Most people believe that solitude created by limited access increases the quality of recreation . . . berry picking, hiking, backpacking, reaching a fishing area, photographing nature, and other pursuits.

The resources of the national forests are one of the Nation's greatest assets. Use and enjoyment of these resources is dependent upon the access provided by forest roads. Although they occupy just over eight percent of the Nation's land base the national forests:

- Provide habitat for nearly 60 percent of all the animal species in the country, including 50 percent of the big game animals and 140 threatened or endangered species.
- Contain 128,000 miles of stream, including 2,404 miles of the Wild and Scenic River System, and 2.2 million acres of lakes and reservoirs.
- Provide 50 percent of the nation's cold water fisheries and 50 percent of the anadromous fish spawning grounds on the West Coast.
- Furnish over half of the West's water supply and a good share of the East's.
- Are the single largest Federal supplier—42 percent of the total—of outdoor recreation in the Nation. More than 4,400 campgrounds, 1,400 picnic grounds, and 102,500 miles of trails provide recreation opportunity for over one quarter million visitor days annually. More than 40 percent of all downhill skiing opportunity exists on the national forests.
- Are a storehouse of over half the Nation's supply of softwood sawtimber.
- Contain nearly one-quarter of our potential energy reserves. Annually, 13 million barrels of oil, 180 billion cubic feet of natural gas, and 21 million short tons of coal are produced on lands of the National Forest System.
- Provide nearly 100 million acres of forage for wildlife, domestic livestock, and free-roaming wild horses and burros.
- Include over 84 percent of the National Wilderness Preservation System in the 48 contiguous States—over 32 million acres.